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Abstract of the Disclosure

Disclosed are compositions and methods for their use, such as in identifying G-protein-coupled receptors, ligands and compounds that modulate the activities of G-protein-coupled receptors. The compositions and methods employ cyclic nucleotide-gated channels and fluorescence dyes in detecting changes of intracellular cAMP levels in response to the stimulation of G-protein-coupled receptors. Activation of the G-protein-coupled receptors can be detected in a variety of assays, including cell-based imaging assays with fluorescence microscopes and high throughput assays with multi-well plates and fluorescence plate readers.